

REMARKS

With entry of the foregoing amendments, claims 1-11 are pending in this application. In the previous office action, the Examiner rejected claims 1-11. No claim has yet been allowed. Claims 1-3, 6-8 and 11 have been amended. No new matter is introduced. Reconsideration is respectfully requested.

Specification

The Examiner objected to the abstract of the disclosure because it is too long. The abstract has been amended such that the number of words does not exceed 150. No new matter is introduced. Withdrawal of this objection is respectfully requested.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 1-11 under 35 U.S.C. § 103(a) as being unpatentable over Perkins ("IP Mobility Support," RFC 2002, October 1996) in view of U.S. Patent 6,400,722 to Chuah et al. Specifically, the Examiner is of the opinion that a conventional foreign agent (FA) as disclosed in Perkins is sufficient to teach both the FA and the proxy mobile node (PMN) as recited in the claims. With entry of the foregoing amendments, Applicants respectfully traverse this rejection.

The present invention is directed to a Mobile IP network infrastructure that includes a proxy mobile node (PMN) for providing Mobile IP registration services on behalf of a mobile node (MN) that does not participate in Mobile IP registration. Preferably, a proxy mobile node is installed at each base station and has access to a database that provides IP address information for the mobile node (MN), its home agent (HA) and the foreign agent (FA) at that base station.

According to the invention, when a mobile node enters a service area it detects the base station from its broadcast pilot signal. In response, the mobile node (MN) transmits link layer messages that provide the identity of the mobile node to the base station. Based on the identity of the mobile node (MN), the proxy mobile node (PMN) accesses the database to obtain a set of IP addresses corresponding to the mobile node (MN), the home agent (HA) of the mobile node's home network, and the foreign agent (FA) at that base station. The proxy mobile node (PMN) then generates and sends a registration request to the foreign agent (FA), which relays the request

to the home agent (HA). The home agent (HA), in turn, registers the proxy mobile node (PMN) as being identified with the mobile node (MN). This same process repeats each time the mobile node (MN) enters into a new service area having its own proxy mobile node. Thus, the use of the proxy mobile node (PMN) at each base station location in a Mobile IP network significantly simplifies the configuration of the mobile node (MN) because no additional software needs to be installed on the mobile node for performing the Mobile IP functionality.

Claims 1, 2, 7 and 8 have been amended to recite these features. Support for these amendments can be found at least in Figs. 3 and 4 and in the specification on page 9, line 21 through page 13, line 14.

Unlike the present invention, Perkins discloses a standard methodology for providing Mobile IP registration services to mobile nodes in which the mobile nodes are required to include functional support for performing Mobile IP registration itself. For example, in Perkins, when a mobile node enters into a new foreign network, the mobile node must detect the foreign agent associated with the foreign network. Such agent discovery is performed by the mobile node by analyzing Agent Advertisements broadcast by the foreign agents on the foreign network. Once the mobile node has detected the foreign agent, the mobile node itself generates and sends a Registration Request to the foreign agent, which relays the Request to the home agent. The Registration Request informs the home agent as to which foreign agent to transmit Mobile IP packets destined for the mobile node as it move from one base station location to the next. (See Perkins, Sections 2, 2.1, 2.4, 2.4.1, 3. 3.1, 3.3, 3.6, 3.7, 3.7.1, and 3.7.2)

Thus, in contrast to the present invention as recited in claims 1, 2, 7 and 8, Perkins does not teach or suggest a proxy mobile node that generates and sends registration requests to a foreign agent on behalf of a mobile node that does not participate in Mobile IP registration. Perkins expressly states that “the foreign agent plays mostly a passive role in Mobile IP registration”; “[it] relays registration requests between mobile nodes and home agents . . .”; and “a foreign agent MUST NOT transmit a Registration Request except when relaying a Registration Request received from a mobile node, to the mobile node’s home agent.” This implies that the mobile node is handling Mobile IP registration itself. (See Perkins, Section 3.7)

Moreover, Perkins also does not teach or suggest (i) the proxy mobile node identifying a mobile node from link layer messages that provide an identity of the mobile node to the base

station; and (ii) the proxy mobile node retrieving an IP address for each of the mobile node (MN), foreign agent (FA), and home agent (HA) from a database based on the identity of the mobile node. In Perkins, the foreign agent only registers the mobile node with the home agent after receiving a Registration Request from the mobile node and all of the address information is provided by the mobile node in the Request.

Regarding Chauh, the Examiner is also of the opinion that “even assuming without admitting that the PMN of the presently claimed invention can be distinguished from the conventional FA taught by Perkins, Chauh is cited as evidence that it was well-known to one of ordinary skill in the art at the time of the invention to use a proxy mobile node (proxy registration agent) in conjunction with a foreign agent at a base station (col. 8, line 63- col. 9, line 24).” We respectfully disagree.

The Chauh passages cited by the Examiner are directed a Network Access Server (NAS), or an L2TP Access Controller (LAC), that incorporates a handoff feature that allows an existing NAS to hand-off an existing PPP connection to another NAS. Thus, when a user switches from one base station to another that existing PPP/L2TP connection is not dropped. (See Chauh, col. 8, line 63- col. 9, line 24)

Chauh does not refer to issues with Mobile IP registration at all. Thus, there also would be no motivation to combine Chuah with Perkins. Moreover, Chauh does not teach or suggest a Mobile IP network infrastructure that includes a proxy mobile node (PMN) for generating and sending registration requests to a foreign agent on behalf of a mobile node that does not participate in Mobile IP registration. Therefore, the Examiner has failed to make out a prima facie case of obviousness.

For at least these reasons, claims 1, 2, 7 and 8 are novel and non-obvious in view of the prior art of record, and thus are patentable.

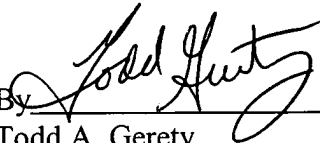
Furthermore, by virtue of at least their dependency on claims 1 and 7, claims 3-6 and 9-11 are also patentable.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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